Red cell use in South Australia 2007–2009: trends, patterns and a focus on haematology

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Aim
To review local red cell use, and focus on haematology specialty-related groups (SRGs). To gain an understanding of drivers of red blood cell (RBC) usage to assist in resource planning.

Methods

- A linked electronic database containing clinical, epidemiological and transfusion data for South Australia (SA) public sector hospitals was used. This database was developed as part of ongoing red cell utilisation work by the SA Department of Health in conjunction with SA Pathology.
- Diagnosis-related group (DRG), principal diagnosis (ICD-10), admission details and red cell transfusions in patients admitted to SA public hospitals were reviewed for three financial years (FY) up to 30 June, 2009.

Results and discussion

RBC use in clinical specialties and haematology (Figures 1–2)
In FY 2008–09, 43,707 units of RBC were transfused in SA public hospitals. From Figures 1A–C:

- One-third of RBC was used for surgical indications, and over half was for medical indications.
- Although comparisons between studies can be misleading due to different demographics, similar results were reported in a UK study by Walls, et al.1
- Haematology accounted for 28% of total RBC use, with 12,213 units being transfused in FY 2008–09.
- Iron deficiency anaemia (IDA) was the main source of RBC use in non-malignant haematology. Acute leukaemia/marrow transplant, myelodysplasia (MDS) and non-Hodgkin's lymphoma (NHL) accounted for the greatest proportions of use in malignant haematological conditions.

Transfusion requirements in malignant haematological conditions (Figure 3)
- NHL accounted for the greatest number of admissions consistent with it being the most common haematological neoplasm. However, most admitted patients with NHL can be managed without transfusion, with a transfusion rate per admitted patient of 30%.
- This contrasts with patients with acute leukaemias and MDS, the majority of whom required transfusion. They had the highest transfusion requirement in the number of RBC units over a 12 month period.
- An ageing population and new therapies (such as Azacitadine in MDS) may affect transfusion demand in this area.

Transfusion in non-malignant haematology

In our study, 2,971 of all RBC use was classified under IDA. This is comparable to other published studies.1,2
- Red cell transfusion is inappropriate for IDA unless an immediate increase in oxygen delivery is required.1 However, RBC transfusion in IDA is common.1,3 Many RBC transfusions may be avoided if early detection and management of iron deficiency are achieved. A clinical update has been published4, and tools developed by the SA BloodSafe program to assist with implementation are available at http://www.health.sa.gov.au/blooddefault.aspx?tabid=72#Iron_Deficiency_Anaemia_in_Adults

Trends in RBC use

- There has been an 8% increase in total RBC transfusion in over the three year period.

After adjustments for activity and case mix, haematology and gastroenterology were the main contributors to the rise in RBC transfusion. RBC transfusion in surgical specialties has declined (data not shown), consistent with best practice initiatives in this area.

Haematology: number of admissions and patients who required transfusion have increased. (See Figure 4.) The SA Cancer Registry reported an increased incidence of leukaemias and non-Hodgkin's lymphomas of at least 30% over the last 30 years. Mortality rates have remained stable.5 This is likely to increase the demand for blood transfusion.

Limitations of the study

- Our data was limited to the public sector; although this accounted for the majority of transfusions, different patterns of use may be seen in private hospitals.
- Data interpretation is dependent on the accuracy of documented admission diagnoses and coding, which may not always reflect the reason for transfusion.
- Comparisons with other studies are difficult due to different disease demographics, data collection methods and "definition" of the haematology. Table 1 compares the findings by other centres on RBC transfusion in haematology.1,2,7,8,9 Our results are most comparable to the study done in Victoria and highlight the significant proportion (4%) of RBC that supports patients with haematological diagnoses.

Conclusion

- Meaningful information on blood usage within the SA public sector can be drawn from linked datasets.
- Haematology is a substantial user of RBC and should be a target for best practice initiatives. A small improvement in practice can lead to a significant reduction in RBC use. The National Patient Blood Management Guidelines will provide opportunities for improving practice based on systematic review of available evidence.

References


Footnotes

1. An admission was coded as an “IDA” if the notes stated it as the primary reason for admission. Our findings may underestimate the extent of RBC transfusion in patients with IDA, depending on the documented admission diagnosis and the consideration of iron deficiency in patients with unexplained anaemia.

2. Conditions included in the “other anaemia” category were sideroblastic anaemia, congenital dyserythropoietic anaemia and “anaemia unspecified”. It was likely that the latter condition accounted for the majority of blood use, and with IDA, would be targets for further analysis.

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